

The Relationship between Risk Management and Financial Performance of Commercial Banks in Bangladesh

Syeda Tanjila Shahnewaz
Assistant Professor
Southeast University, Dhaka, Bangladesh
Email: syedatanjila8@gmail.com

Abstract

Risk management concerns are more significant in the banking industry not just for efficiency in banks but also for overall business development and the growth of the economy at large. The bank's risk management incentive exposes potential hazards that may lead to subpar performance. This study provides empirical evidence for theories related to the banking sector and examines the impact of liquidity, which serves as the primary indicator of a bank's financial performance. The results of the cross-sectional OLS regression indicate that the capital structure of the five Bank of Bangladesh is influenced by both the static deal theory and the cost theory of the organization. The absence of a secondary market will impact the expenses of an organization, since shareholders who are unable to sell their shares may exert influence on management to act in their favor. The study examines the average values of a sample of five banks in Bangladesh from 2018 to 2022 to identify the factors that influence financial performance. This study demonstrates that the bank listed on the Bangladesh stock exchange primarily relies on secondary data rather than primary data, resulting in a more organized and solid research approach.

1. Introduction

The convergence of globalization and rapid improvements in computer technology generates novel commercial opportunities, while financial and economic institutions exhibit heightened dynamism and diversity in terms of risk compared to previous periods. In the domain of organizational and strategic management, the significance of recognition, evaluation, and risk control has reached unprecedented levels. Many organizations, especially those that are publicly traded, face significant financial risks, as the value of these enterprises depends on current market conditions. Universal hazards encountered by all companies include liquidity risk, credit risk, market risk, and additional risks (Kassi et al., 2019).

Financial risk refers to the possibility of returns experiencing sudden and significant variations or fluctuations. Multiple financial risks often emerge. The hazards mentioned have an adverse impact on the financial performance of a business (Kioko et al., 2019; Muriithi, 2016). The notion of financial risk comprises several forms of risk finance, including financial transactions involving loans that carry the possibility of corporate default. Financial risk stems from the

potential for suffering losses in the stock market due to unpredictable variations in asset values. These phenomena, as described by Al-Tamimi and Al-Mazrooei (2007), are often linked to debt and are unlikely to result in a balanced synchronization of obligations and responsibilities with current assets. Financial performance refers to a company's ability to effectively implement strategies and important decisions in order to achieve its goals, objectives, and significant profits. Prudent financial institutions are essential for promoting economic development inside a country's financial system. Therefore, the financial success of banks is important as it simultaneously improves the quality of life for individuals. Financial institutions, namely banks, have done several efficacy assessments. The results of these studies show different results for the overall financial performance on a global scale (Doliente, 2003; Kioko et al., 2019).

Recently, there has been a substantial quantity of empirical studies investigating the influence of financial risk management on financial performance. Multiple studies highlight the paramount importance of the country's financial sector as the bedrock of a healthy and prosperous economy. The banking sector plays a vital role in enabling financial transactions in less developed countries (Hawkins and Mihaljek, 2001; Sathyamoorthi et al., 2020).

1.1 Commercial Bank of Bangladesh

The financial system in Bangladesh is predominantly composed of two categories of institutions: banks and non-bank financial institutions (NBFIs). The supervision and regulation of the banking sector in Bangladesh is conducted by the Bangladesh Bank (referred to as BB), which functions as the nation's central bank. The banking sector has a substantial share of the assets in the financial industry. By the conclusion of December 2011, a total of 48 banks were responsible for approximately 95 percent of the sector's aggregate assets. Since 2002, the state-owned commercial banks (SCBs) have experienced a decline in their control over the banking system, while private commercial banks (PCBs) and foreign commercial banks (FCBs) have seen a rise in their market share of deposits and bank loans and advances. The mentioned tendency signifies an increase in competitiveness within the banking sector (Bhattacharya and Chowdhury 2003). The market share of the SCBs experienced a substantial decline in 2011, accounting for only 28.75% of the total industrial assets, as opposed to 54.4% in 1990. Conversely, the market dominance of PCBs rose to 65.24% in 2011, a significant increase from its previous share of 22.6% in 1990. Over the last ten years, FCBs have shown a little increase in their total industrial assets. In 2011, FCBs held 6.0 percent of the industry's assets.

The banking sector has undertaken substantial measures in the 1990s to introduce effective legal, structural, and regulatory reforms, aiming to create a streamlined environment. The Financial Sector Reforms Program (FSRP) introduced various significant measures to improve the classification and setting aside of funds for loans, reinforce the sufficiency of capital reserves, restructure the legal framework, and boost the oversight of central banks. Since 1994, the banking industry has utilized a rating system known as CAMEL (Capital Adequacy, Asset Quality, Management, Earnings and Liquidity) to evaluate the performance of scheduled banks based on their capital adequacy, asset quality, management, earnings, and liquidity. Presently, Bangladesh Bank has adopted the Early Warning Systems (EWS) of supervision to address the issues faced by banks. Any bank facing difficulties in its operational areas, as evaluated by the CAMELS framework, is categorized as part of the EWS category and subjected to intensive supervision to promote performance improvement (Mollik and Bepari 2009).

1.2 Statement of the Problem

Liquidity problems arise for a bank when it lacks sufficient liquid assets, such as cash or easily convertible securities, to satisfy its short-term obligations at a reasonable price. The scarcity of physical currency is the cause. Banks are susceptible to such liquidity issues due to their reliance on revenue produced from the sale of long-term loans and short-term deposits. If banks fail to promptly give customers cash, it might lead to a significant problem. If banks defer the disbursement of cash to customers by a single day, it may prompt other depositors to hastily withdraw all their funds simultaneously from their deposit accounts. As their confidence diminishes in the bank. Consequently, the depletion of cash reserves in the bank would lead to its insolvency. According to Deloitte's 2020 report, banks should prioritize gaining a clear understanding of liquidity concerns as they take action. The magnitude, extent, and projected duration of this deficit will impact decisions regarding measures to safeguard liquidity in the present moment, prompting banks to determine whether alternative means of financing should be pursued in the future. As stated by the Board of Governors of the Federal Reserve System (2019), banks have implemented liquidity stress testing models that use assumptions about the inflows and outflows associated with current funding methods, which are likely to be impacted during periods of market and firm-specific liquidity stress. Bank liquidity groups must ensure they fully understand the present and ongoing consequences and establish strategic plans that can be sustained for a potentially prolonged period.

The management of liquidity has become a crisis among commercial banks in Bangladesh, with some banks being adversely affected by both the worldwide pandemic and liquidity problems. The correlation between liquidity and financial performance of commercial banks in a developing country such as Bangladesh. This analysis was conducted using a data methodology on a sample of banks from 2012 to 2021. Liquidity does not have a substantial effect, either positive or negative, on the financial performance indicators of return on asset (ROA) and return on equity (ROE).

1.3 Importance of the Research

This study examines the influence of systemic risks on many banks that are listed on the Dhaka Stock Exchange in Bangladesh. Banks occupy a prominent position in the money and capital markets and are recognized as a crucial element of the financial system, exerting a significant influence on the overall well-being of the economy. The project aims to equip corporate banking decision-makers with the necessary tools and knowledge to make informed decisions and effectively manage the impact of risks, particularly systemic risks, on banking outcomes. Financial institutions are placing greater emphasis on actively identifying and mitigating risks in order to prevent any adverse effects on company results. Strengthening banks' ability to recognize these risks would increase their assurance in making future business decisions. They will have a range of choices to address these expected hazards, considering both their knowledge and traits. To carry out a thorough investigation, it is crucial to have a deep understanding of various types of systemic risks that could potentially affect the banks' performance.

1.4 Research Objective

The main objective of the study is to show the effects of systemic risk on the Bank of Bangladesh's performance and to identify the most relevant systematic risk steps for the banking sector to improve its performance, improve performance and avoid the expected risks.

1. Identify the liquidity management of the Commercial Bank of Bangladesh to determine its requirements.
2. Aim to pick out various factors and investigate the factors affecting the liquidity risk of the Commercial Bank of Bangladesh and develop the liquidity risk management policy.
3. By using some ratios of the Commercial Bank of Bangladesh examine advance, deposit and profit and analyse the numerical data.

2. Literature Review

2.1 Financial Risk Management

Bessis and O Kelly (2015) defined risk as an uncertain measure of the prospective return on an investment, which is evaluated relative to a specific benchmark over a specified time frame. This suggests that risk may be quantified, especially when comparing two potential investments, and that one would prefer the investment with lesser risk to be clearly stated and preferred. Commercial banks commonly face financial risks that might potentially lead to significant losses for other banks, resulting in a chain reaction known as a bank run, unless effectively managed. Kenya's commercial banks function within a volatile and cutthroat environment characterized by a multitude of business activities. The fluctuation in interest rates has led to a conflict in the interest rate market, posing a risk to banks. Consequently, banks are exposed to the potential risks associated with interest rates. Therefore, it is crucial to establish appropriate boundaries for interest rates (Charumathi, 2008).

Banking risks include credit risk, liquidity risk, interest rate risk, and currency risk. Financial risk management is an integral part of the decision-making process, involving the identification, analysis, and mitigation of risks. It comprises a comprehensive evaluation of potential dangers and strategies for managing risks. One way to achieve Risk Management is by investing in government bonds that are both volatile and free, as opposed to investing in government debt and paying interest. Another approach is to utilize alternatives for money hedging, which can be done by the fund manager. Every organization should use its risk management methods to effectively mitigate risks such as commercial and financial concerns. Insurance firms generally provide reimbursement to their consumers once the damages occur. Certain hazards, such as fire, injury, or life insurance, seem to be inherent and not subject to regulation. Compensation is provided in the event of any occurrence (Brouwers and Ekenberg, 2002).

2.1.1 Liquidity

Bank liquidity refers to the capacity to fund increases in assets and fulfil bond obligations as required. The profitability of a bank refers to its capacity, relative to its capital base, to generate earnings that exceed its expenses. An enduring and lucrative banking sector is more adept at mitigating adverse impacts and enhancing the stability of the financial system. Previous bank profitability studies have predominantly employed linear models to assess the impact of several factors that may be important in explaining benefits. The bank's profitability is often

determined by a combination of internal and external factors. The factors that directly influence bank profitability are commonly known as micro-specific or bank-specific variables. These can be broadly categorized into two variables: financial reporting and non-financial statements. The determinants of bank profitability encompass various factors such as cost management, credit quality and structure, deposit composition, market interest rates, financial performance, capital management, and liquidity management. The profitability of banks can be determined by non-financial statement characteristics such as the number of banking branches, the size, and the location of the banks. External determinants refer to characteristics that are unrelated to banking but instead represent the economic and legal environment in which financial institutions operate and carry out their activities. The factors encompassed are fiscal oversight, rivalry, consolidation, market dominance, expansion, and possession. The following items are included: Extensive research has been conducted on the factors that determine bank profitability, and nearly all of these studies acknowledge the crucial role of liquidity in determining the profitability of banks. Bashir (2000) and Guru et al. (2002).

Meanwhile, the relationship between bank liquidity and profitability has been reported to be diverse. Research findings suggest that banks with higher levels of liquid assets tend to have a more favourable perception of capital markets, leading to reduced funding costs and improved profitability. Commercial banks employ financial tools to effectively mitigate and control their exposure to financial risk in their operations. Implementing effective exposure control measures would enhance the bank's profitability. According to Stulz (1984), if financial risk is not managed properly, it will result in unpredictable changes in the amount of external funds received. This can lead to a decrease in the confidence of making profitable investments, resulting in a loss of investment. Consequently, the shareholders of the company will not get any dividends, failing. Every bank has the responsibility to design a financial risk management program that can identify risk, devise risk assessment methodologies, establish policies, procedures, and other processes to monitor areas of risk, and promptly report the results of each risk.

2.2 Financial Performance

Financial performance refers to the utilization of financial indicators to categorize and evaluate the outcomes of the organization, following their anticipated expectations, in comparison to their actual results. It enables management to assess if the company's resources are effectively utilized to generate economic value, hence enhancing dividends and capital gains for the

shareholders. The financial performance elements utilized include profitability, asset returns, operating efficiency, and return on equity. Financial output refers to the subjective measure of a company's revenue generation through its core business model (Delaney et al., 2015). Furthermore, it has an impact on the financial well-being of enterprises for a specific period (Kahuria and Waweru, 2015).

Financial success is determined by the extent to which investors and shareholders have improved their positions at the end of a certain period compared to the beginning. The results are generally derived from financial statements that provide an overview of income, financial situation, and securities pricing data. This allows enterprises to compare themselves with other companies in the same industry based on previous periods (Graca, Barry & Doney 2015). Liquidity concerns refer to the situation where a bank does not possess enough readily convertible securities that meet the demands of its investors. The lack of sufficient resources leads to a decrease in sales, which in turn impacts the company's profitability. Market risk encompasses various factors, one of which is a significant increase in interest rates that will prompt investors to seek alternative products to reduce the selling of loan portfolios. Credit risk detrimentally impacts the financial performance of a firm when it holds multiple inappropriate loans that lack collateral or company ownership, hence diminishing the company's financial performance. Financial performance is an indicator of a company's robust revenue, asset portfolio, and branch network.

2.2.1 GDP Relation with Liquidity

Increased economic growth would facilitate a reduction in banks' liquidity reserves and incentivize greater lending activity. Bordo et al. (2001) proposed both ideas about liquidity in deposit institutions. You have explicitly said that the perceptions of financial crises and the subsequent panic behaviour, driven by the expectation of the crisis, ultimately lead to the inevitability of the financial disaster. Banks are confronted with the consequences of mass psychology or paranoia. Bordo et al. (2001) assert that crises are an inherent component of the business cycle, resulting from sudden disruptions to economic fundamentals. In the event of an economic recession or downturn, it is anticipated that asset returns may decrease. Debtors would encounter difficulties in repaying their debts, while depositors, anticipating an increase in defaults or non-performing loans, would want to safeguard their wealth by withdrawing their bank savings. Banks face a dilemma due to the lack of readily available cash from their loans

and the need to have enough liquid funds from deposits. This situation can lead to the banks becoming unable to pay their debts and becoming insolvent.

2.2.2 ROE Relation with Liquidity

The factors that influence the variation in return on equity (ROE) and the extent to which specific determinants might impact ROE levels are highly relevant. The evaluation of changes in return on equity (ROE) relies on the analysis of numerous factors such as solvency, liquidity, profitability, and productivity. These determinants are derived from a similar study conducted by Boyd et al. in 2007. According to Boyd et al. (2007), firm effects such as performance, liquidity, profitability, and solvency may be controlled and are influenced by decisions made by managers. The user's text is empty. Solvency ratios assess the influence of the company's capital structure and bankruptcy risk on its return on equity (ROE) (Yusuf et al., 2014). The efficiency ratio evaluates the impact of ROE on the optimal utilization of the company's assets. The liquidity ratio demonstrates the influence of the company's short-term financial obligations on its return on equity (ROE), while the profitability ratios determine how changes in operating margins, whether positive or negative, affect ROE. Return on equity (ROE) measures the profitability of shareholders and determines the accounting earnings for each dollar of book capital (Sinkey, 1998).

2.2.3 NPL Relation with Liquidity

According to Zhu, Wang, and Wu (2014), the increase in non-performing loans (NPLs) that reduce the quality of banks' assets is regarded to have a negative impact on the overall health and effectiveness of the banking industry. Furthermore, prior studies indicate that loan defaults have a detrimental impact on the entire economy (Barseghyan 2010, Zeng 2012). Due to the significant influence it has, banking regulatory bodies must comprehend the factors that influence loan defaults in banks' portfolios, especially in nations that rely largely on the emerging banking sector. Bank defaults can be empirically associated with specific features and macroeconomic issues (Beaton et al., 2016; Dimistrios, Helen, and Mike, 2016).

2.2.4 CAP Relation with Liquidity

Capital of the Banks (CAP) encompasses the sale of assets and the retention of income generated. Bank capital serves as a protective measure against bad growth, as stated by Athanasoglou et al. (2008). The literature employs two terms related to capital: actual capital and regulatory capital. Efficient equity and long-term loan capital are considered tangible assets recorded on the bank's balance sheets. The capital ratio also referred to as the equity-to-total

asset ratio, is a commonly used statistic. Regulatory capital refers to the risk-based capital that is maintained in compliance with the supervisory regulations of a country. The capital is assessed using two metrics: the capital ratio and the risk-based equity ratio (CAR). National regulatory agencies monitor the bank's Capital Adequacy Ratio (CAR) to ensure that it meets the required level of loss and complies with regulatory capital standards. The predictability of profitability is uncertain according to previous study (Sharma & Gounder, 2012). Several studies suggest that the profits generated by capital and banks are positive (Hassan & Bashir, 2005; Dietrich & Wanzenrid, 2009; Davydenko, 2010; Olweny & Shiphoo, 2012). Conversely, certain research indicates that capital and banks have exhibited unfavourable profitability (Saona, 2011; Qin & Pastory, 2012). Therefore, it is not possible to theoretically foresee how capital will affect profitability.

2.2.5 TOA Relation with Liquidity

Costs are kept low and operations are efficiently managed to take advantage of economies of scale. Banks possess superior capabilities compared to their industry competitors, enabling them to produce large-scale things at a remarkable speed. The major banking institutions, with their extensive experience, have cultivated and refined their expertise, making them more knowledgeable about the market compared to smaller firms. Due to their limited size and resources, small firms encounter the challenge of managing significant expenses. Prior research has examined the relationship between the financial success of an organization and its scale. The impact might be either beneficial or detrimental in significant literature (Mule et al., 2015). Onounga (2014) asserted that there is a positive correlation between the two aforementioned variables. The author endorses stringent laws that compel banks to augment their assets and capital base, which is essential for the government's economic expansion. The assets in this section pertain to assets that contribute to the expansion of banks' overall size. The bank's profitability would incrementally rise due to the growth of its assets and capital base. Mule et al. (2015) established that a direct relationship exists between return on equity, profitability, and firm size. The authors concluded that changes in the company's size have a direct and proportional impact on equity returns.

3. Methodology

Between the Exploratory study and the Formal Study, our research can be classified as the formal study. The formal study begins where the exploration leaves off- it begins with a hypothesis or research questions and involves data source specifications and precise

procedures. The purpose of the formal study is to test whether there is any relation or not and to answer the research question. In monitoring the researcher observes the activities of a subject or the nature of some material without bringing out responses from others. In our research, we are monitoring various Bank of Bangladesh. The data was selected from ten different commercial Bank of Bangladesh from 2018 to 2022. The study utilizes Eviews software for the detailed analysis and interpretation of the statistical study since the study measures each independent variable and will do relevant analysis of relationships.

Research Question and Hypothesis

IV= CAP

Q: Does CAP have a significant relation with the determinant of liquidity?

Ho: CAP does not have a significant relation with the determinant of liquidity.

HA: CAP does have a significant relation with the determinant of liquidity.

IV= NPL

Q: Does NPL have a significant relation with the determinant of liquidity?

Ho: NPL does not have a significant relation with the determinant of liquidity.

HA: NPL does have a significant relation with the determinant of liquidity.

IV= ROE

Q: Does ROE have a significant relation with a determinant of liquidity?

Ho: ROE does not have a significant relation with the determinant of liquidity.

HA: ROE does have a significant relation with the determinant of liquidity.

IV= TOA

Q: Does TOA have a significant relation with the determinant of liquidity?

Ho: TOA does not have a significant relation with the determinant of liquidity.

HA: TOA does have a significant relation with the determinant of liquidity.

IV= GDP

Q: Does GDP have a significant relation with the determinant of liquidity?

Ho: GDP does not have a significant relation with the determinant of liquidity.

HA: GDP does have a significant relation with the determinant of liquidity.

4. Data Analysis

In comprehensive business research, it is important for business researchers to interpret the data they gather so that they can obtain a correct outcome of their results with great precision when performing thorough business research for particular organizations. For this reason,

researchers have to look at a few relevant statistical instruments including average, median, minimum value/maximum value and standard deviation, so that the six major determinants can be calculated more reliably and meticulously.

Table 1: Descriptive Analysis (2018 -2022)

	ROE	NPL	TOA	CAP	GDP	LI
Mean	0.377559	0.882742	0.085514	0.085600	9.108415	0.146387
Median	0.332581	0.647650	0.097562	0.080000	9.188454	0.050596
Maximum	0.634602	2.429640	0.148259	84.36455	10.03970	1.569206
Minimum	0.160173	0.303465	0.020702	-34.42834	7.432569	0.025217
Std. Dev.	0.121931	0.592567	0.046375	26.60549	0.826198	0.278702
Skewness	0.509684	1.383119	-0.135182	0.971757	-1.003802	4.633649
Kurtosis	2.343409	3.653882	1.392235	4.085030	2.715225	24.24531
Jarque-Bera	1.837776	10.09954	3.322508	6.193175	5.139458	671.5574
Probability	0.398962	0.006411	0.189901	0.045203	0.076556	0.000000
Sum	11.32678	26.48227	2.565431	362.5741	273.2524	4.391619
Sum Sq. Dev.	0.431145	10.18293	0.062369	20527.71	19.79547	2.252570
Observations	50	50	50	50	50	50

Mean and Median

- From the above table, we can say that the mean for our given sample ROE for the given years in our industry is 0.377559 and the median is 0.332581.
- From the above table, we can say that the mean for our given sample NPL for the given years in our industry is 0.882742 and the median is 0.647650.
- From the above table, we can say that the mean for our given sample TOA for the given years in our industry is 0.085514 and the median is 0.097562.
- From the above table, we can say that the mean for our given sample CAP for the given years in our industry is 0.085600 and the median is 0.080000.
- From the above table, we can say that the mean for our given sample GDP for the given years in our industry is 9.108415 and the median is 9.188454.
- From the above table, we can say that the mean for our given sample LI for the given years in our industry is 0.146387 and the median is 0.050596.

Correlation Analysis

Correlation analysis is a method used to determine the association between two variables. When assessing correlations, the first step is to establish an index to verify the presence of a relationship between two variables. Its value ranges between +1 and -1. A coefficient with a value of +1 or close to +1 indicates a high positive correlation between two variables. Conversely, a coefficient that is close to -1 indicates a significant negative correlation between

the two variables. A value of 0 does not indicate a correlation between two variables. Afterwards, the course of the relationship between the two variables must be calculated. The correlation range can be split into below categories:

Table 2: Rule of Thumb for Interpreting the Size of Correlation Coefficient

Size of Correlation	Interpretation
.90 to 1.00	Very strong positive correlation
.70 to .90	Strong positive correlation
.50 to .70	Moderate positive correlation
.30 to .50	Weak positive correlation
.00 to .30	Very weak positive correlation
0	No relationship
-.90 to -1.00	Very strong negative correlation
-.70 to -.90	Strong negative correlation
-.50 to -.70	Moderate negative correlation
-.30 to -.50	Weak negative correlation
-.00 to -.30	Very weak negative correlation

As, mentioned above our dependent variable is Debt to Liquidity (Loans/Total) and our independent variables are Return on Equity, Non-Performing Loan, TOA (Bank Size), CAP and GDP. E-views software has been used to determine the correlation between dependent and independent variables. E-views software has helped us to get the correlation coefficient.

Table 3: Correlation Analysis (2018 -2022)

	ROE	NPL	TOA	CAP	GDP	LI
ROE	1	-0.21364	0.1828	-0.2936	0.0045	-0.2176
NPL	-0.2136	1	0.1913	0.7653	-0.0440	0.9999
TOA	0.18283	0.1913	1	-0.2176	0.6704	0.1876
CAP	-0.2936	0.7653	-0.21769	1	-0.4608	0.7670
GDP	0.0045	-0.0440	0.6704	-0.4608	1	-0.0442
LI	-0.2176	0.9999	0.1876	0.7670	-0.0442	1

Determinant of the Liquidity to Return on Equity: The correlation coefficient between Determinant of the Liquidity to Return on Equity $r = 0.2176250628698153$, which implies a low negative coefficient and a weak negative relationship between the two variables.

Determinant of the Liquidity to Non-Performing Loan: The correlation coefficient between Determinant of the Liquidity to Non-Performing Loan is $r = 0.9999265720143002$, which shows a significant coefficient and a significant relationship between the two variables.

Determinant of the Liquidity to TOA (Bank Size): The correlation coefficient between Determinant of the Liquidity to TOA (Bank Size) is $r = 0.7670378065920229$, which shows a high positive coefficient and a very significant relationship between the two variables.

Determinant of the Liquidity to GDP: The correlation coefficient between the Determinant of the Liquidity to GDP is $r = -0.04424889115603353$, which suggests a negative medium-sized coefficient and thus a moderate negative relationship among the two variables.

Regression Analysis (2010 -2019)

Table 4: Regression Analysis (2010 -2019)

Dependent Variable: LI
Method: Panel Least Squares
Date: 02/12/23 Time: 15:20
Sample: 2018 - 2022
Periods included: 5
Cross-sections included: 10
Total panel (balanced) observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ROE	-0.078570	0.093574	-0.839653	0.0411
NPL	0.984389	0.004657	211.3906	0.0000
TOA	-1.008783	0.645376	-1.563094	0.1345
CAP	4.445748	5.521024	0.805240	0.0230
GDP	0.188245	0.134596	1.398591	0.1780
C	10.54304	7.016202	1.502671	0.1494
R-squared	0.999890	Mean dependent var		10.23560
Adjusted R-squared	0.999861	S.D. dependent var		19.72863
S.E. of regression	0.232427	Akaike info criterion		0.125081
Sum squared resid	1.026423	Schwarz criterion		0.417611
Log-likelihood	4.436487	Hannan-Quinn criter.		0.206216
F-statistic	34579.19	Durbin-Watson stat		0.597534
Prob(F-statistic)	0.000000			

We have observed 10 Commercial Bank at 5-year annual reports of Bangladesh (2018 – 2022), we did the regression analysis using the 2018-2022 annual report. As a result, there are 50 observations. Our dependent variable is the determinant of the liquidity (Loans/Total Assets). Our independent variables are CAP, TOA, NPL, ROE, and GDP.

Equation Analysis

The study constructed an equation

$$\text{Financial Performance (Liquidity)} = \alpha + \beta_1 * \text{ROE} + \beta_2 * \text{NPL} + \beta_3 * \text{TOA} + \beta_4 * \text{CAP} + \beta_5 * \text{GDP} + \epsilon.$$

Here, from the result which is given by E-Views software stated above, the study can construct the regression equation like this:

$$\text{Liquidity} = 10.54304 + -0.078570 \text{ ROE} + 0.984389 \text{ NPL} + --1.008783 * \text{ TOA} + 4.445748 \text{ CAP} + 0.188245 \text{ GDP}.$$

ROE: It shows a coefficient value of - 0.078570. This means that a one (1) unit change or increase in ROE will lead to a - 0.078570 change or decrease in the Determinant of the liquidity (Loans/Total Assets).

NPL: It shows a coefficient value of 0.984389. This means that a one (1) unit change or increase in NPL will lead to a 0.984389 change or decrease in the Determinant of the liquidity (Loans/Total Assets).

TOA: It shows a coefficient value of 1.008783. This means that a one (1) unit change or increase in TOA will lead to a 1.008783 change or decrease in the Determinant of the liquidity (Loans/Total Assets).

CAP: It shows a coefficient value of 4.445748. This means that a one (1) unit change or increase in CAP will lead to a 4.445748 change or increase in the Determinant of the liquidity (Loans/Total Assets).

GDP: It shows a coefficient value of 0.188245. This means that a one (1) unit change or increase in GDP will lead to a 0.188245 change or increase in the Determinant of the liquidity (Loans/Total Assets).

Hypothesis Testing

To test the hypothesis, our assumption for the standard significance level is taken as $\alpha = 10\%$, $\alpha = 0.10$. Then α will be 10% for our entire projects.

Variable	Significance Level (α)	Probability	Comparison	Decision
ROE	0.10	0.0411	$0.0411 < 0.10$	Reject Null
NPL	0.10	0.0000	$0.0000 < 0.10$	Reject Null
TOA	0.10	0.1345	$0.1345 > 0.10$	Do not reject Null
CAP	0.10	0.0230	$0.0230 < 0.10$	Reject Null
GDP	0.10	0.1780	$0.1780 > 0.10$	Do not reject Null

Common Variance Analysis

R-squared is a statistical measure of how close the data are to the fitted regression line. It is also known as the coefficient of determination, or the coefficient of multiple determinations for multiple regressions. In general, the higher the R-squared, the better the model fits with the data. From Table 3, we can see that the common variance R square is 0.9998 which means that all the independent variable brings about a change of 99.98% on the dependent variables together.

Goodness of Fit Model Test (F-Test)

A Goodness of Fit, or simply the Good Fit Model, measures whether the model is of good fit or not in determining if the data are reasonable in giving the results that the researcher is looking for. This test also helps to identify how closely the data, as calculated in the E-views, will fit the hypothesis. (Alcocer, n.d.) In this test, the values that will be taken are “ α ” which is also known as the significance level, and Probability (F-Statistic) or “F” which is taken for statistical study.

The alpha, “ α ” value is taken as 10% or $\alpha = 0.10$ for all the given calculations and hence the test is made with a 90% confidence level.

The Probability (F-Statistic) figure will be taken from E-views computations which were formulated after inputting all data for the analysis.

As per the regression table from E-views, the value of “F” is 0.000000 where the significance level, α is 10% or 0.10.

$$0.000000 < 0.10$$

Therefore, the regression model “F” value (0.000000) is less than the significance level of “ α ” =0.10. Hence, it can be stated that it is a model of good fit.

5. Recommendations and Findings

Regression correlation was employed in this study to analyze the data. The study's findings indicate that NPL and CAP exhibit a moderately positive correlation with loans/total assets. Additionally, GDP shows a weak positive correlation with loans/total assets, while ROE demonstrates a weak negative correlation. Furthermore, TOA displays a weak positive correlation with loans/total assets, and GDP also exhibits a weak positive correlation with loans/total assets. The regression model yields an r-square value of 0.569720, indicating that about 99.98% of the variations in the dependent variable can be accounted for by the independent variable.

We advise that a bank prioritize maintaining a strong liquidity position, as a high liquidity ratio indicates the bank's financial stability and low exposure to risk. The primary concerns in the operation of commercial banks are their liquidity and profitability. institutions utilize their surplus liquidity to extend loans or make investments to enhance the profitability of the institutions. Given that their primary objective is to generate wealth. A bank with a stronger liquidity position is capable of easily absorbing any shocks or uncertainties. While maintaining

a favourable liquidity position is beneficial for banks, excessive liquidity can lead to a decline in a bank's profitability.

A higher p-value than the significance level indicates the acceptance of null hypotheses and shows no significant relationship with the dependent variable.

As our correlation shows both positive and negative relationships, the Commercial Bank of Bangladesh should be careful about the selection of capital structure. Because the Commercial Bank of Bangladesh was not able to select a proper capital structure, it may hamper the performance of Banks. In that case, all efforts will go in vain. There are several factors which play crucial roles in this regard:

- The Commercial Bank sector of Bangladesh is not efficient for the capital structure of the industry. There is inadequate competition in the market among commercial Banks.
- Profitability gets lower of the Commercial Bank of Bangladesh.
- Commercial Bank of Bangladesh may have higher debt compared to total fixed assets. This impacts in asset Structure.

6. Conclusions

In conclusion, the research discusses liquidity and the factors that influence it at the Commercial Bank of Bangladesh. This study investigated the influence of liquidity on commercial banks in Bangladesh. The text outlines the interrelationships between the variables of Return on Equity (ROE), Capital Adequacy Ratio (CAP), Total Asset Turnover (TOA), Gross Domestic Product (GDP), and Non-Performing Loans (NPL) concerning the determinants of liquidity in the Commercial Bank of Bangladesh. This study utilizes the financial statements and annual reports of the Commercial Bank of Bangladesh from 2018 to 2022. This study demonstrates that the independent variables (NPL, CAP, and GDP) exert an influence on the Commercial Bank of Bangladesh. The findings of our study were derived from a restricted sample size. It is plausible that the outcomes would have been more favourable had we been able to analyze a larger sample. Although we have allowed for the possibility of conducting additional studies. Finally, it may be stated that liquidity is a crucial determinant for the banking sector. A bank's liquidity framework must ensure the maintenance of adequate liquidity to resist all types of stressful situations that may be encountered.

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